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| Evidence For Design In The Universe from *Limits for the Universe* by Hugh Ross, Ph.D. in Astronomy  A PDF version of this chart can be viewed and printed by selecting this [link](http://doesgodexist.com/PDF-Files/Evidence-for-Design-in-the-Universe.pdf).   |  |  |  |  | | --- | --- | --- | --- | |  | | | | | 1 | Gravitational coupling constant | If larger: | No stars less than 1.4 solar masses, hence short stellar life spans | | If smaller: | No stars more than 0.8 solar masses, hence no heavy element production | | 2 | Strong nuclear force coupling constant | If larger: | No hydrogen; nuclei essential for life are unstable | | If smaller: | No elements other than hydrogen | | 3 | Weak nuclear force coupling constant | If larger: | All hydrogen is converted to helium in the big bang, hence too much heavy elements | | If smaller: | No helium produced from big bang, hence not enough heavy elements | | 4 | Electromagnetic coupling constant | If larger: | No chemical bonding; elements more massive than boron are unstable to fission | | If smaller: | No chemical bonding | | 5 | Ratio of protons to electrons formation | If larger: | Electromagnetism dominates gravity preventing galaxy, star, and planet formation | | If smaller: | Electromagnetism dominates gravity preventing galaxy, star, and planet formation | | 6 | Ratio of electron to proton mass | If larger: | No chemical bonding | | If smaller: | No chemical bonding | | 7 | Expansion rate of the universe | If larger: | No galaxy formation | | If smaller: | Universe collapses prior to star formation | | 8 | Entropy level of universe | If larger: | No star condensation within the proto-galaxies | | If smaller: | No proto-galaxy formation | | 9 | Mass density of the universe | If larger: | Too much deuterium from big bang, hence stars burn too rapidly | | If smaller: | No helium from big bang, hence not enough heavy elements | | 10 | Age of the universe | If older: | No solar-type stars in a stable burning phase in the right part of the galaxy | | If younger: | Solar-type stars in a stable burning phase would not yet have formed | | 11 | Initial uniformity of radiation | If  smoother: | Stars, star clusters, and galaxies would not have formed | | If coarser: | Universe by now would be mostly black holes and empty space | | 12 | Average distance between stars | If larger: | Heavy element density too thin for rocky planet production | | If smaller: | Planetary orbits become destabilized | | 13 | Solar luminosity | If increases too soon: | Runaway green house effect | | If increases too late: | Frozen oceans | | 14 | Fine structure constant[\*](http://doesgodexist.com/Charts/EvidenceForDesignInTheUniverse.html#*#*) | If larger: | No stars more than 0.7 solar masses | | If smaller: | No stars less then 1.8 solar masses | | 15 | Decay rate of the proton | If greater: | Life would be exterminated by the release of radiation | | If smaller: | Insufficient matter in the universe for life | | 16 | 12C to 16O energy level ratio | If larger: | Insufficient oxygen | | If smaller: | Insufficient carbon | | 17 | Decay rate of 8Be | If slower: | Heavy element fusion would generate catastrophic explosions in all the stars | | If faster: | No element production beyond beryllium and, hence, no life chemistry possible | | 18 | Mass difference between the neutron and the proton | If greater: | Protons would decay before stable nuclei could form | | If smaller: | Protons would decay before stable nuclei could form | | 19 | Initial excess of nucleons over anti-nucleons | If greater: | Too much radiation for planets to form | | If smaller: | Not enough matter for galaxies or stars to form | | 20 | Galaxy type | If too elliptical: | Star formation ceases  before sufficient heavy element buildup for life chemistry | | If too irregular: | Radiation exposure on occasion is too severe and/or heavy elements for life chemistry are not available | | 21 | Parent star distance from center of galaxy | If farther: | Quantity of heavy elements would be insufficient to make rocky planets | | If closer: | Stellar density and radiation would be too great | | 22 | Number of stars in the planetary system | If more than one: | Tidal interactions would disrupt planetary orbits | | If less than one: | Heat produced would be insufficient for life | | 23 | Parent star birth date | If more recent: | Star would not yet have reached stable burning phase | | If less recent: | Stellar system would not yet contain enough heavy elements | | 24 | Parent star mass | If greater: | Luminosity would change too fast; star would burn too rapidly | | If less: | Range of distances appropriate for life would be too narrow; tidal forces would disrupt the rotational period for a planet of the right distance; uv radiation would be inadequate for plants to make sugars and oxygen | | 25 | Parent star age | If older: | Luminosity of star would change too quickly | | If younger: | Luminosity of star would change too quickly | | 26 | Parent star color | If redder: | Photosynthetic response would be insufficient | | If bluer: | Photosynthetic response would be insufficient | | 27 | Supernovae eruptions | If too close: | Life on the planet would be exterminated | | If too far: | Not enough heavy element ashes for the formation of rocky planets | | If too infrequent: | Not enough heavy element ashes for the formation of rocky planets | | If too frequent: | Life on the planet would be exterminated | | 28 | White dwarf binaries | If too few: | Insufficient fluorine produced for life chemistry to proceed | | If too many: | Disruption of planetary orbits from stellar density; life on the planet would be exterminated | | 29 | Surface gravity (escape velocity) | If stronger: | Atmosphere would retain too much ammonia and methane | | If weaker: | Planet's atmosphere would lose too much water | | 30 | Distance from parent star | If farther: | Planet would be too cool for a stable water cycle | | If closer: | Planet would be too warm for a stable water cycle | | 31 | Inclination of orbit | If too great: | Temperature differences on the planet would be too extreme | |  |  |  |  | | 32 | Orbital eccentricity | If too great: | Seasonal temperature differences would be too extreme | |  |  |  |  | | 33 | Axial tilt | If greater: | Surface temperature differences would be too great | | If less: | Surface temperature differences would be too great | | 34 | Rotation period | If longer: | Diurnal temperature differences would be too great | | If shorter: | Atmospheric wind velocities would be too great | | 35 | Gravitational interaction with a moon | If greater: | Tidal effects on the oceans, atmosphere, and rotational period would be too severe | | If less: | Orbital obliquity changes would cause climatic instabilities | | 36 | Magnetic field | If stronger: | Electromagnetic storms would be too severe | | If weaker: | Inadequate protection from hard stellar radiation | | 37 | Thickness of crust | If thicker: | Too much oxygen would be transferred from the atmosphere to the crust | | If thinner: | Volcanic and tectonic activity would be too great | | 38 | Albedo (ratio of reflected light to total amount falling on surface) | If greater: | Runaway ice age would develop | | If less: | Runaway green house effect would develop | | 39 | Oxygen to nitrogen ratio in atmosphere | If larger: | Advanced life functions would proceed too quickly | | If smaller: | Advanced life functions would proceed too slowly | | 40 | Carbon dioxide level in atmosphere | If greater: | Runaway greenhouse effect would develop | | If less: | Plants would not be able to maintain efficient photosynthesis | | 41 | Water vapor level in atmosphere | If greater: | Runaway greenhouse effect would develop | | If less: | Rainfall would be too meager for advanced life on the land | | 42 | Ozone level in atmosphere | If greater: | Surface temperatures would be too low | | If less | Surface temperatures would be too high; there would be too much uv radiation at the surface | | 43 | Atmospheric electric discharge rate | If greater: | Too much fire destruction would occur | | If less: | Too little nitrogen would be fixed in the atmosphere | | 44 | Oxygen quantity in atmosphere | If greater: | Plants and hydrocarbons would burn up too easily | | If less: | Advanced animals would have too little to breathe | | 45 | Oceans to continents ratio | If greater: | Diversity and complexity of life-forms would be limited | | If smaller: | diversity and complexity of life-forms would be limited | | 46 | Soil materializations | If too nutrient poor: | diversity and complexity of life-forms would be limited | | If too nutrient rich: | Diversity and complexity of life-forms would be limited | | 47 | Seismic activity | If greater: | Too many life-forms would be destroyed | | If less: | Nutrients on ocean floors (from river runoff) would not be recycled to the continents through tectonic uplift | | \*(A function of three other fundamental constants, Planck's constant, the velocity of light, and the electron charge each of which, therefore, must be fine-tuned) | | | | |
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| from a paper “Limits for the Universe” by Hugh Ross, Ph.D., updated to “Astronomical Evidences for the God of the Bible,” which is available online at http://www.reasons.org/resources/apologetics/astroevid.shtml |

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